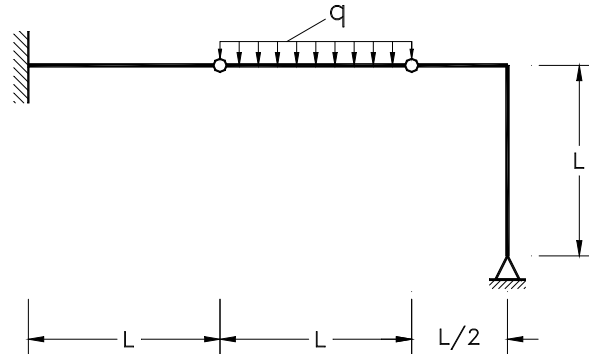


PROBLEM SET NO. 2:

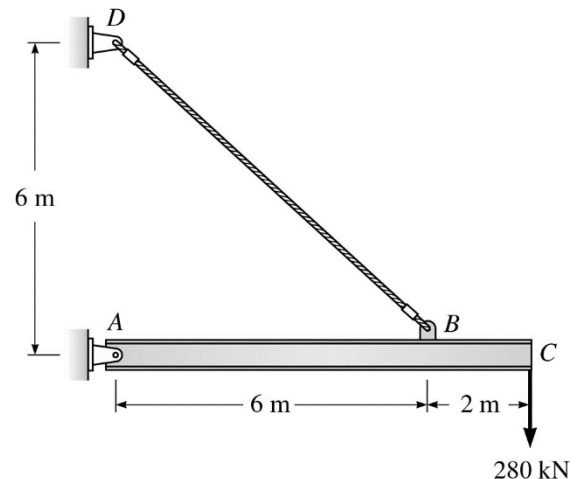
Problem 1: (CLO-1)

For the frame structure and loading shown right, plot the deflected shape, indicate any points of inflection and find the *quantitative* Bending Moment, Shear Force, and Axial Force Diagrams. Assume that all members have a constant flexural stiffness ($E, I = \text{constant}$) and neglect axial deformations ($A = \infty$). Clearly define your global and local sign conventions.



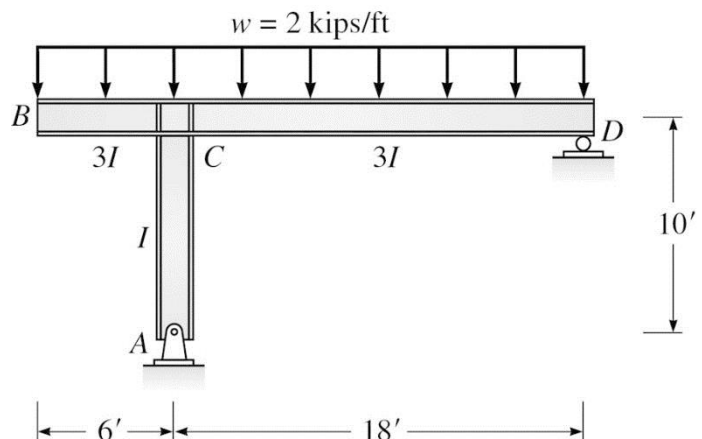
Problem 2: (CLO-2)

Compute the vertical displacement of point C for the beam in the figure to the right. For the beam $I = 360 \times 10^6 \text{ mm}^4$ and $E = 200 \text{ GPa}$. For the cable $A = 1600 \text{ mm}^2$ and $E = 150 \text{ GPa}$.



Problem 3: (CLO-2)

Compute the vertical deflection at midspan of member CD in the figure to the right. Consider both axial and bending deformations. Assume that $E = 29,000 \text{ kips/in}^2$, $I = 80 \text{ in}^4$, area of column = 6 in^2 , and area of girder = 8 in^2 .



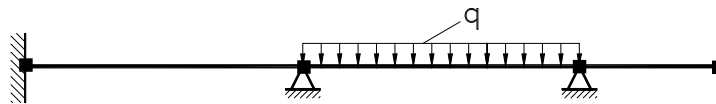
Problem 4: (CLO-1)

For the beam systems and loading given below, carefully sketch the deformed shape; determine n_s , n_k and n_p ; and sketch the *qualitative* bending moment and shear force diagrams. Assume that E and I are constant for all elements and neglect axial deformations.

a)



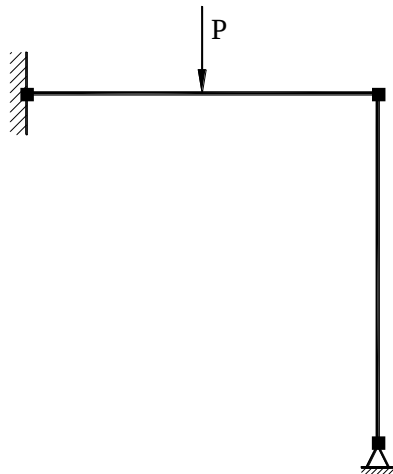
b)



Problem 5: (CLO-1)

For the frame systems and loading given below, carefully sketch the deformed shape; determine n_s , and n_p ; and sketch the *qualitative* bending moment, shear and axial force diagrams. Assume that E and I are constant for all elements and neglect axial deformations.

a)



b)

